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EXAMINER	
YAEN, CHRISTOPHER H	
ART UNIT	PAPER NUMBER
1642	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/693,121	Applicant(s) SCHLOM ET AL.	
	Examiner Christopher H Yaen	Art Unit 1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *17-29* is/are pending in the application.

4a) Of the above claim(s) *26-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group II in Paper No. 6 is acknowledged. Applicant cancels claims 1-16 and newly adds claims 17-29. A species election of Avipox (canary pox) and Adjuvant (RIBI Detox) was made. Claims 21 and 23 are drawn to non-elected species of pox viruses, and will not be examined on the merits. Claims 26-29 are drawn to inventions not claimed by original presentation. Claim 17 also contains limitations not set forth in the original presentation of the claims. Claims drawn to methods of generating a CTL immune response to PSA and using a viral vector encoding for PSA to generate a CTL immune response will be examined on the merits. Claims or parts of claims referring to cytokines and co-stimulatory molecules will not be examined on the merits. Therefore, claims 17(parts)-20, 22, 24-25 will be examined on the merits.

Claim Objections

2. Claim 18 is objected to because of the following informalities: in line one of the claim, there is an extra *"at"*. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 17-20,22,24-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 17, in the recitation of the phrases: *"sufficient amount of PSA"*, it is not known what the applicant intends as an amount that is sufficient for the generation of an immune response; *"effective amount of cytokine"*, it is not clear as to the amount that the applicant contends to be an effective amount. Clarification is required.

In regards to claim 18 and 19 in the recitation of the phrase *"additional PSA"*, it is unclear as to the amount of PSA that is added during one of the periodic intervals of contacting the host with PSA.

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 17-18 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the generation of an immune response following the infection/immunization with a pox virus (*vaccinina*) containing the nucleotide sequences for PSA, does not reasonably provide enablement for the general administration and contacting of PSA to host for the eliciting of an immune response to PSA. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. Claim 17 as currently interpreted in the instant application is directed at the administration or contacting of an amount of PSA, in any form (PSA peptides, proteins, nucleic acids) to a host in the attempts to generate an immune response. The specification of the instant application details the immunization of a

mammalian subject with a viral pox vector encoding for an epitope against PSA that elicits an immune response. The invention broadly claims any form of PSA, but is only enabled for viral immunization, which lead to *in vivo* production of PSA leading to an immune response to PSA. The instant application makes no attempt to describe or detail any methodology that would allow one of skill to make and use any form of PSA, except for viral immunization, to generate an immune response.

Claim 17-19 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The instant application is based on the eliciting of an immune response to PSA, by contacting a host cell with either PSA or a T-cell eliciting epitope. Although the instant application teaches the methods necessary to generate an immune response to immunization of host cells with a viral vector encoding for PSA, it does not teach of the specific epitope that elicits the T-cell response. It is noted, that in the specification (pg 12 line 7-20), that the applicant discloses the method for identifying the epitope but does not specifically clarify the epitope that is responsible for this immune response. The instant application invites the skilled artisan to experiment. The factors which must be considered in determining undue experimentation are set forth in *In re Wands* 8 USPQ2d 1400. The factors include: 1) quantity of experimentation, 2) the amount of guidance presented, 3) the presence or absence of working examples, 4) the nature of the invention, 5) the state of the prior art, 6) the predictability of the art, 7) breadth of the claims.

In regards to factors one and two cited above, the quantity of experimentation needed to determine the specific epitope required for the eliciting of an immune response to PSA, there has not been provided adequate guidance in the written description for the identity of such.

In regards to factors four, five, and six cited above, it is noted that there is a great deal of unpredicatability associated with determining the specific epitope that is able to elicit an immune response. The instant application fails to provide such an epitope for the eliciting of an immune response.

With regards to factors three and seven cited above, it is noted that the working examples are limited to the immunization of a viral pox vector encoding for a PSA molecule. Such is not seen as sufficient to support the breadth of the claims, wherein the scope of the claims encompasses the use of a T-cell eliciting epitope, of which the epitope is not specifically identified. It is noted that Law requires that the disclosure of an application shall inform those skilled in the art how to use applicant's alleged discovery, not how to find out how to use it for themselves. (see *In re* Gardner *et al.*. 166 USPQ 138 (CCPA 1970))

Double Patenting

7. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in

scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

8. Claims 17-20, 22, 24 an 25 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 4-6, 8-9, 11-12 of prior U.S. Patent No. 6,165,460. This is a double patenting rejection.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness

11. If the rejection of claims 17-18 for the contacting of PSA of any form with a host under 35USC §112 first paragraph (see above pg 3) is overcome, a rejection under 35 USC §103 can be made. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fenton RG *et al.* (Journal of the National Cancer Institutes 1993 Aug 18, 85(16):1294-302, see abstract) in view of Peace *et al.* (Cancer Vaccines: Structural Basis for Vaccine Development (abstract) 1994, spec Ref listing and pg 2 line 11).

Claims 17-18 are drawn to methods of generating an immune response to PSA in a host comprising contacting the host with a sufficient amount of PSA or a cytotoxic T-cell eliciting epitope, with periodic intervals of administration.

Fenton RG *et al.* disclose of a method of vaccinating, *in vivo,* a protein (mutant ras-protein) that led to a CTL generation or immune response (see abstract). Fenton RG *et al.* does not disclose of using PSA to generate this CTL response. Peace *et al.*, however, does disclose of a method of PSA mediated generation of CTL (CD4+ and CD8+ cells)(see abstract).

Therefore, it would have been *prima facie* obvious at the time the invention was made to one of ordinary skill in the art to derive a method of contacting a host with PSA to generate an immune response, like CD8+ or CTL. It was already known in the art at the time the invention was made that the generation of an immune response to a protein was possible by *in vivo* administration. Furthermore, it was also known that PSA could elicit an immune response, generating a CD8+ or CD4+, and hence a CTL response. One would have been motivated to combine the references because, the success achieved by Fenton *et al.* in the generation of a CTL response to their protein, could have been transferred to PSA, given the fact that it was known that PSA could elicit CTL responses. Therefore, it would have been obvious to combine the references described above to conceive of the claimed invention as taught by the instant application.

12. Claims 17-20, 22, 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spitler et al (1995), in view of Paoletti *et al.* (1993), and further in view of. Montefiori *et al.* (1992).

Claims 17-20, 22, 24-25 are drawn to methods of generating an immune response to PSA by contacting a host with PSA followed by the contacting of the host by additional PSA encoded by a recombinant pox virus, with limitations set forth for the types of pox viruses, and the adjuvants associated with PSA.

Spitler et al teach vaccines capable of eliciting an anti-tumor immune response wherein the active ingredient in the vaccine formulation is PSA (pages 6-7) and methods to make the vaccine composition including the adjuvants as listed in claims 24 and 25 (pages 11-13) as well as liposome formulations and vaccinia expressed systems (page 15).

Paoletti et al teach that pox virus vectors (such as avipox vectors and orthopox virus vectors) can be used for expression of foreign proteins.

Montefiori et al teach an immune response induced by an immunization with recombinant vaccinia expressing gp160, followed by a second immunization with recombinant protein.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to construct and/or conceive of a method to generate an immune response to PSA in a host comprising the contacting of a host with PSA or a T-cell eliciting epitope, followed by the immunization of the host with additional PSA encoded for by a pox virus, because Spitler *et al.* in view of Montefiori *et al.* disclosed

the methodology for this type of immune elicitation. One of ordinary skill in the art would have been motivated to do so in view of the reasonable expectation of success in being able to induce immune responses to the expressed protein by first immunizing with a protein of choice followed by a second booster immunization with the purified protein or peptide as was expressed in the vaccinia. Although, Montefiori *et al.* disclose of a method that is not in the same sequential steps as that disclosed in the instant application, it would have been obvious to make the necessary corrections or adjustments to achieve the same method as described in the instant application.

In addition, Spitler *et al.* in view of Paoletti *et al.* makes the contemplation of the idea of using different pox viruses for the generation of immune responses to PSA obvious because, Paoletti *et al.* disclose of the use of different pox viruses such as avipox and orthopox, and Spitler *et al.* discloses the use of PSA in formulations to generate immune responses. It would have been obvious to substitute PSA for the antigen in view of the success in obtaining immune reponses to PSA as taught by Spitler *et al.* One of ordinary skill in the art would have been motivated to do so because these viruses have the advantages (listed as for e.g. on page 295) of being highly attenuated and not being dependent for specific receptors for entry into cells and ability to express protein independent of host cell regulation and amplification of specific CTL responses.

Conclusion

13. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher H Yaen whose telephone number is 703-305-3586. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa can be reached on 703-308-3995. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4242 for regular communications and 703-305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Christopher Yaen
Art Unit 1642
March 8, 2002

GEETHA P. BANSAL
PRIMARY EXAMINER